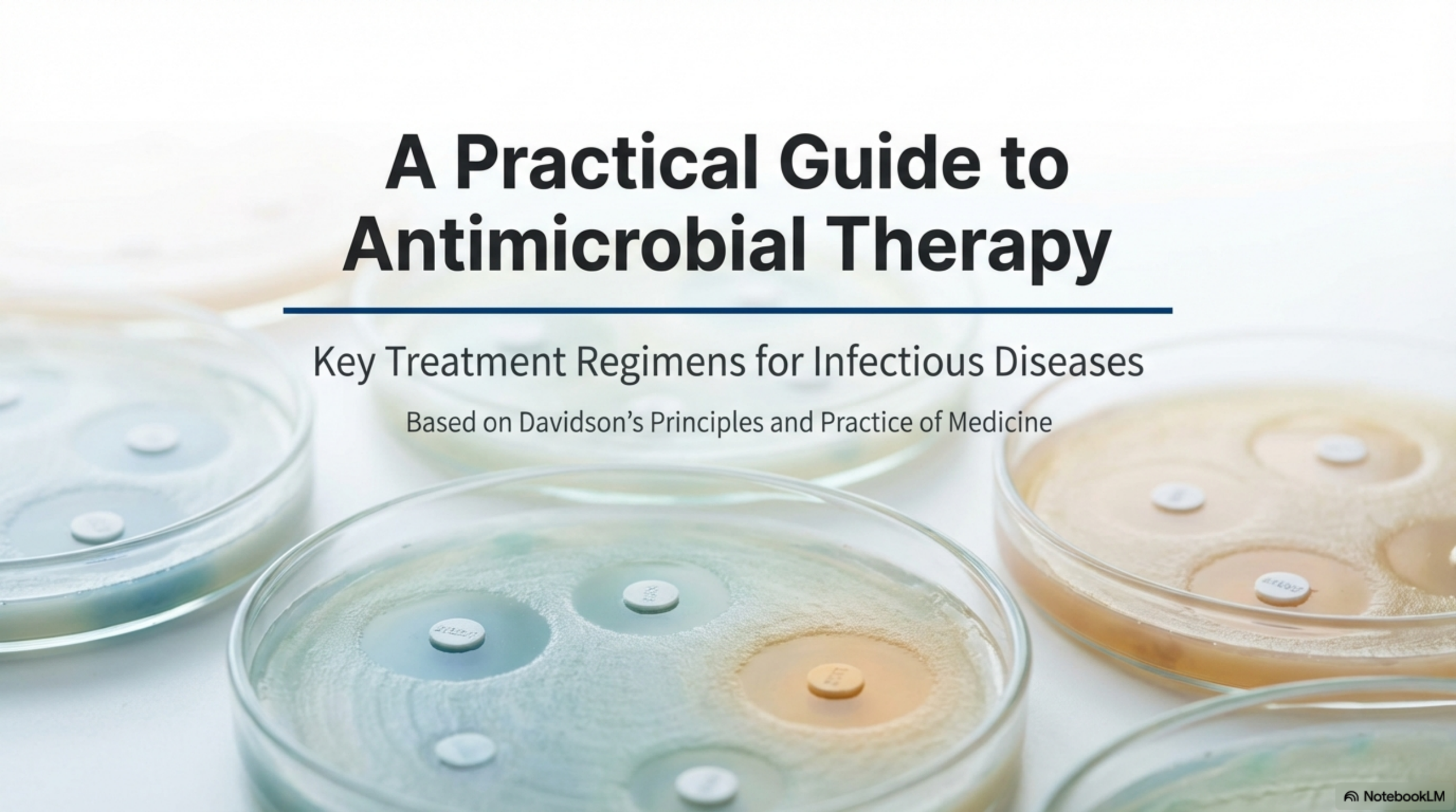
A Practical Guide to Antimicrobial Therapy

Key Treatment Regimens for Infectious Diseases

Based on Davidson's Principles and Practice of Medicine



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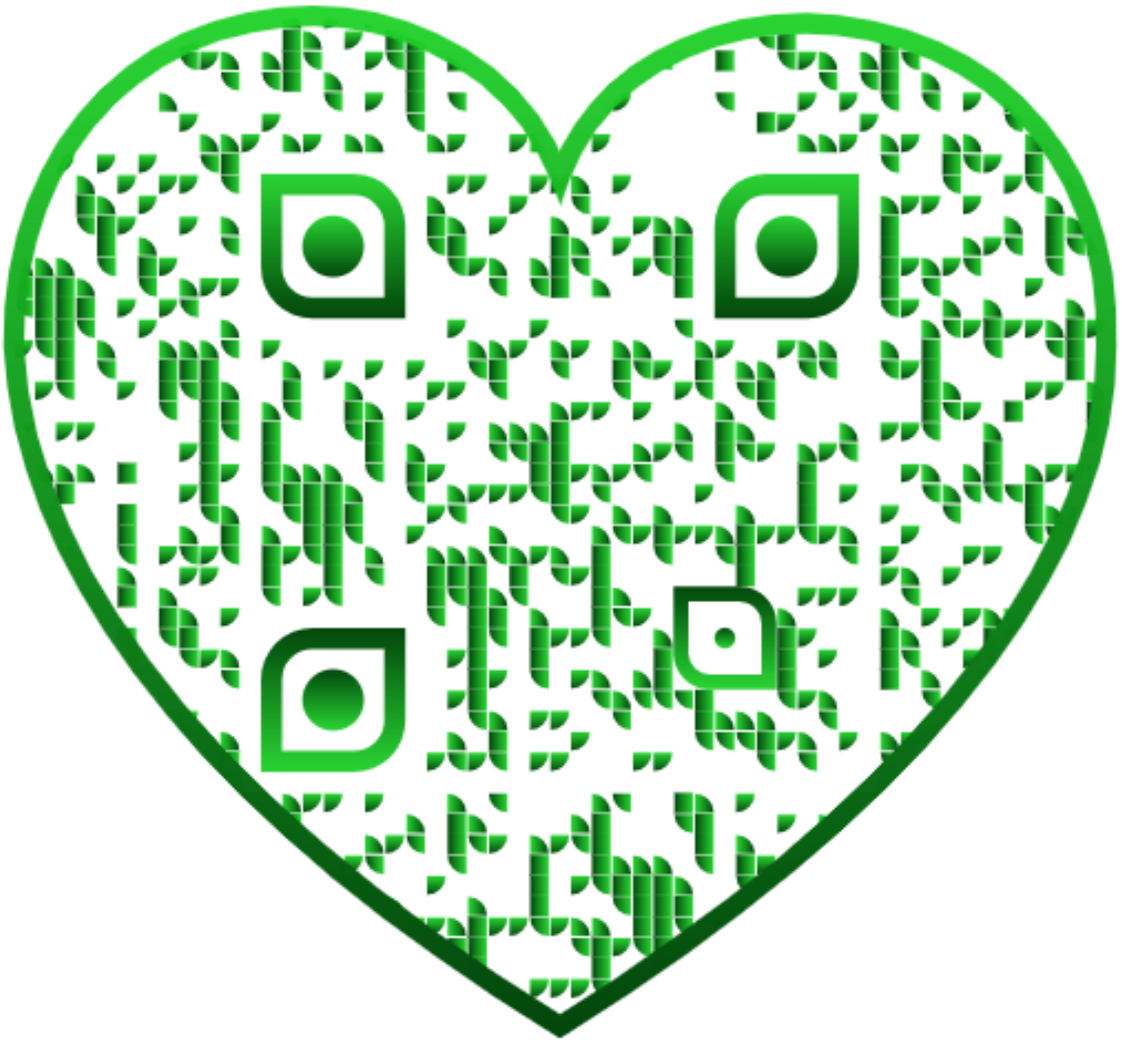

How to Use This Guide

- **Condition / Organism:** The diagnosed or suspected infection.
- **First-Line Treatment:** Standard-of-care therapy, including drug name, dose, route of administration, and duration.
- **Second-Line / Alternatives:** Key options for cases of resistance, allergy, or failure of first-line agents.
- **Key Considerations:** Critical clinical notes for specific patient populations (e.g., pregnancy, immunosuppression), notable complications, or management principles.

The clinical challenge or pathogen.

The primary, evidence-based therapeutic path.

Contingency plans for common clinical variables.

Crucial context and safety information.

Condition / Organism	First-Line Treatment	Second-Line / Alternatives	Key Considerations
Community-Acquired Pneumonia (CAP), Mild-to-Moderate	Amoxicillin 1 g PO q8h for 5 days OR Doxycycline 100 mg PO q12h for 5-7 days	Respiratory Fluoroquinolone (e.g., Levofloxacin 750 mg PO daily for 5 days)	Avoid fluoroquinolones if alternative exists. Consider local resistance patterns. Pregnancy: Avoid Doxycycline.

The primary, evidence-based therapeutic path.

Crucial context and safety information.

Icon Key

Indicates specific guidance for pregnancy.

Highlights issues of significant drug resistance.

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Management of Severe & Necrotizing Soft Tissue Infections

Condition	First-Line Treatment	Second-Line / Alternatives	Key Considerations
****Necrotising Fasciitis****	Broad-spectrum empirical therapy: Piperacillin-tazobactam + Clindamycin OR Meropenem + Clindamycin	For marine exposure: Ceftazidime/Ciprofloxacin + Doxycycline. Add Vancomycin or Linezolid if MRSA is suspected.	⚠ **Medical Emergency.** Requires immediate surgical débridement with inspection of involved muscle groups.
****Gas Gangrene (Clostridial Myonecrosis)****	High-dose IV Penicillin + Clindamycin	Cephalosporins + Metronidazole	Requires aggressive surgical débridement of affected tissues. Hyperbaric oxygen has a putative but controversial role.
****Streptococcal Toxic Shock Syndrome (TSS)****	High-dose IV Benzylpenicillin + Clindamycin (to inhibit toxin production)	IV Immunoglobulin is often administered	Urgent débridement if associated with necrotising fasciitis.

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Common Staphylococcal & Catheter-Related Infections

Condition	First-Line Treatment	Second-Line / Alternatives	Key Considerations
Cellulitis / Erysipelas (Staph/Strep)	Flucloxacillin or Clindamycin.	Vancomycin or Linezolid if MRSA is prevalent or suspected.	Oral therapy is appropriate for localized infections.
Staphylococcal Toxic Shock Syndrome (TSS)	IV antistaphylococcal agent (e.g., Flucloxacillin) + Clindamycin.	N/A	Immediate and aggressive fluid resuscitation is critical. Women should avoid tampons for at least 1 year post-recovery.
Central Venous Catheter Infection (Coagulase-Negative Staph)	Vancomycin ± antibiotic lock therapy for ~14 days.	N/A	Consider line removal. Treatment with catheter in situ is an option for tunnelled catheters.
Central Venous Catheter Infection (*S. aureus*)	Catheter removal + 14 days of IV antimicrobial therapy (e.g., Flucloxacillin or Vancomycin based on sensitivity).	N/A	Chance of curing infection with catheter in situ is low. Catheter removal is also required for *aeruginosa*, *Candida* spp., or atypical mycobacterial infections.

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Systemic Bacterial Infections: Zoonotic & Vector-Borne

Condition	First-Line Treatment	Second-Line / Alternatives	Key Considerations
Lyme Disease (Borrelia burgdorferi)	Early (Erythema Migrans): Doxycycline 100mg BID or Amoxicillin 500mg TID for 14 days.	Disseminated/Neuroborreliosis: IV Ceftriaxone for 3-4 weeks.	A Jarisch-Herxheimer reaction may occur in the first 24 hours of therapy.
Brucellosis	Doxycycline 100mg BID for 6 weeks + Gentamicin 5mg/kg IV daily for 7 days.	Doxycycline + Rifampicin 600-900mg daily for 6 weeks.	Neurobrucellosis requires adding IV Ceftriaxone 2g BID.
Q Fever (Coxiella burnetii)	Acute: Doxycycline.	Chronic/Endocarditis: Prolonged Doxycycline + Hydroxychloroquine.	Valve surgery is often required for endocarditis.
Leptospirosis	Doxycycline 100mg BID OR IV Penicillin (900mg QID) for 7 days.	Parenteral Ceftriaxone 1g daily is also effective.	Meticulous general care, including potential dialysis for acute kidney injury, is critical.

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Management of Bacterial Gastroenteritis & C. difficile

Condition	First-Line Treatment	Second-Line / Alternatives	Key Considerations
Shigellosis (Bacillary Dysentery)	Ciprofloxacin 500mg BID for 3 days.	Azithromycin or Ceftriaxone due to high rates of resistance.	Antidiarrhoeal agents are not recommended and should be avoided.
Enteric Fever (Typhoid - S. Typhi)	Ciprofloxacin 500mg BID for 14 days (if susceptible).	Ceftriaxone or Azithromycin 500mg daily are key alternatives due to widespread fluoroquinolone resistance.	Pyrexia may persist for up to 5 days after starting effective therapy.
Campylobacter Infection	Usually self-limiting, supportive care only.	For severe or prolonged cases, treat with a macrolide (e.g., Azithromycin).	Many organisms are resistant to ciprofloxacin.
Clostridioides difficile Infection (CDI)	Stop offending antibiotic. Oral Vancomycin 125mg QID for 10 days.	Fidaxomicin is associated with a lower relapse rate.	Faecal transplantation is increasingly used for recurrent CDI. Surgical intervention must be considered early in severe cases.

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Treatment of Leprosy (Hansen's Disease)

Based on WHO Multidrug Therapy (MDT) Regimens

Condition	First-Line Treatment	Duration	Key Considerations
Paucibacillary (1-5 skin lesions)	Rifampicin 600mg (*monthly, supervised*) + Dapsone 100mg (*daily, self-administered*).	6 months	This is the standard WHO regimen.
Multibacillary (>5 skin lesions or nerve involvement)	Rifampicin 600mg + Clofazimine 300mg (*monthly, supervised*) (*monthly, supervised*) PLUS Dapsone 100mg & Clofazimine 50mg (*daily, self-administered*).	12 months	This is the standard WHO regimen for more extensive disease.
Type 1 Reaction (Reversal)	Prednisolone 40-60mg daily, tapered over 3-6 months.		Indicated for new impairment of nerve or eye function.
Type 2 Reaction (Erythema Nodosum Leprosum - ENL)	Moderate: Prednisolone 40mg daily. Severe: Thalidomide or Prednisolone 40-80mg daily, tapered over 1-6 months.		Thalidomide is contraindicated in women who may become pregnant.

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Management of Common Viral Exanthems

Condition	Treatment	Key Considerations
Measles	Primarily supportive care.	Vitamin A may improve outcome in uncomplicated disease. Immunoglobulin therapy for exposed non-immune pregnant or immunocompromised contacts within 6 days of exposure. Reserve antibiotics for bacterial superinfections.
Rubella (German Measles)	Supportive care.	Main focus is prevention via MMR vaccine. Management centers on risk of congenital malformation if infection occurs during pregnancy.
Chickenpox (Varicella)	Adults presenting <48h from vesicle onset: Oral Aciclovir 800mg 5x/day for 5 days. Oral Aciclovir 800mg 5x/day for 7-10 days to reduce pain. Post-herpetic neuralgia: Amitriptyline, Gabapentin, or Pregabalin.	Immunocompromised patients, pregnant women, or those with complications (e.g., pneumonitis) require IV Aciclovir. Prophylaxis for exposed high-risk contacts with VZIG or oral Aciclovir.
Shingles (Herpes Zoster)		Urgent ophthalmology review required for ophthalmic division involvement.

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Systemic Viral Infections & Herpesviruses

Condition	Treatment / First-Line	Second-Line / Alternatives	Key Considerations
Influenza	Oseltamivir, if started <48h from symptom onset.		Can also be used as prophylaxis for high-risk individuals during outbreaks.
Infectious Mononucleosis (EBV)	Symptomatic.		Avoid ampicillin/amoxicillin due to high risk of rash. A short course of prednisolone may help with severe pharyngeal oedema.
Cytomegalovirus (CMV)	Immunocompetent: Symptomatic. Immunocompromised: IV Ganciclovir or Oral Valganciclovir.	Foscarnet or Cidofovir for ganciclovir-resistant strains.	Treatment is essential in immunocompromised patients to prevent retinitis, pneumonitis, or encephalitis.
Herpes Simplex (HSV-1/2)	Primary Genital HSV: Aciclovir 200mg 5x/day for 7-10 days. HSV Encephalitis: **IV Aciclovir 10mg/kg TID for 14-21 days.**		HSV Encephalitis is a medical emergency; do not delay treatment.

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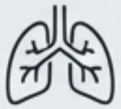
Therapeutic Approaches to COVID-19

	Condition / Patient Group	Treatment	Key Considerations
	All Patients (Supportive Care)	High-flow oxygen, proning, fluid management, prophylactic anticoagulation for VTE	These are the cornerstones of management for all hospitalized patients
	Hospitalized, Requiring Supplemental Oxygen	Dexamethasone	Improves survival in this patient group
	Hospitalized, Severe (ICU / High O_2 needs / CRP ≥75 mg/L)	Tocilizumab (IL-6 inhibitor)	Reduces mortality and time to recovery if given within 24h of ICU admission
	Early Outpatient (High-Risk, within 3-5 days of symptoms)	Oral antivirals (e.g., Molnupiravir, Paxlovid)	Goal is to prevent hospitalization and death
	Hospitalized, Seronegative (No natural antibody response)	Monoclonal antibody combinations (e.g., casirivimab and imdevimab - REGEN-COV)	Reduces hospital stay and mortality in this specific subgroup

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Management of Severe Tropical & Haemorrhagic Fevers

Condition	Treatment	Key Considerations
Dengue Fever	Supportive care with meticulous fluid management.	Avoid aspirin due to bleeding risk. Monitor for warning signs (e.g., abdominal pain, mucosal bleeding) that may signal progression to severe dengue.
Yellow Fever	Supportive care.	Prevention is key via a highly effective live attenuated vaccine.
Viral Haemorrhagic Fevers (VHF)	Lassa Fever / South American VHF: IV Ribavirin. Ebola (EVD): Supportive care, monoclonal antibodies.	Strict infection control measures (BSL-4 level precautions) are paramount. Suspect in any febrile patient from an endemic area within a 21-day incubation period.
Japanese Encephalitis	Supportive care.	Prevention via vaccination is recommended for travelers to endemic areas during monsoon season.

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Antimalarial Therapy

Condition	First-Line Treatment	Second-Line / Alternatives	Key Considerations
Mild Falciparum Malaria	Artemisinin-based Combination Therapy (ACT), e.g., Co-artemether (artemether/lumefantrine) 4 tablets orally at 0, 8, 24, 36, 48, and 60 hrs.	Atovaquone–proguanil OR Quinine (600mg TID for 5-7 days) + Doxycycline (200mg daily for 7 days).	ACT is the WHO-recommended standard of care.
Severe Falciparum Malaria	IV Artesunate 2.4 mg/kg at 0, 12, and 24 hrs, then daily. Switch to oral ACT once patient can tolerate.	IV Quinine	⚠ This is a medical emergency requiring intensive supportive care for complications like coma, anaemia, and renal failure.
Non-Falciparum Malaria (*P. vivax* / *P. ovale*)	Chloroquine (if sensitive region). Followed by Primaquine (30mg daily for 14 days) or Tafenoquine for radical cure.	ACT (e.g., Co-artemether) if chloroquine-resistant.	**Must check G6PD status before giving Primaquine or Tafenoquine** to avoid severe haemolysis.

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Treatment of Leishmaniasis & Trypanosomiasis

Condition	First-Line Treatment	Second-Line / Alternatives	Key Considerations
Visceral Leishmaniasis (Kala-azar)	Liposomal Amphotericin B (AmBisome). Dosing varies by region (e.g., single dose of 10mg/kg in South Asia; total dose of 21-24 mg/kg in Europe).	Miltefosine, Paromomycin Pentavalent antimonials in non-resistant areas.	Treatment of HIV-VL co-infection is difficult, with high relapse rates.
Cutaneous Leishmaniasis (CL)	Local therapy (cryotherapy) or intralesional antimonials.	Systemic therapy (e.g., Amphotericin B) for severe or mucosal disease.	Treatment choice depends on species, severity, and location of lesions.
African Trypanosomiasis (T. b. gambiense)	Stage 1: Fexinidazole. Stage 2 (CNS involvement): Fexinidazole (if CSF WBC <100), otherwise NECT (Nifurtimox-Eflornithine Combination Therapy).		Staging with lumbar puncture is essential as it dictates therapy.
American Trypanosomiasis (Chagas' Disease)	Acute / Early Chronic Phase: Benznidazole or Nifurtimox for 60 days.		Treatment aims to be parasiticidal but does not reverse existing cardiac or digestive tissue damage.

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Therapy for GI Protozoa & Common Helminth Infections

Condition	First-Line Treatment	Second-Line / Alternatives	Key Considerations
Amoebiasis (*Entamoeba histolytica*)	**1.** Metronidazole 800mg TID for 5-10 days (for invasive disease). **2.** Followed by a luminal agent (e.g., Diloxanide furoate 500mg TID for 10 days) to eradicate cysts.		The two-step process is crucial to prevent relapse.
Giardiasis (*Giardia lamblia*)	Single-dose Tinidazole 2g OR Metronidazole 400mg TID for 10 days.		Can cause chronic diarrhoea and malabsorption if untreated.
Hookworm / Roundworm (*Ascaris*) / **Whipworm** (*Trichuris*)	Single-dose Albendazole 400mg.	Mebendazole 100mg BID for 3 days.	Mass drug administration with single-dose albendazole is a key public health strategy.
Strongyloidiasis	Ivermectin 200 µg/kg daily for 2 days.	Albendazole 15mg/kg BID for 3 days.	Hyperinfection syndrome in immunocompromised hosts is life-threatening and requires longer duration of therapy.

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Guiding Principles for Antimicrobial Use

- This guide is for educational and reference purposes, based on the provided source text. It is **not a substitute for expert clinical judgment**.
- **Always consult current local and national prescribing guidelines** and antimicrobial susceptibility data before making treatment decisions.
- **Patient-specific factors**—including allergies, renal/hepatic function, comorbidities, and pregnancy status—must guide final therapeutic choices.
- The treatment of infectious diseases is a dynamic field. **Seek specialist advice** from an infectious diseases physician or clinical microbiologist for complex or refractory cases.

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